

Geothermal Energy Utilization

SMU Conference – Monday, November 3, 2009

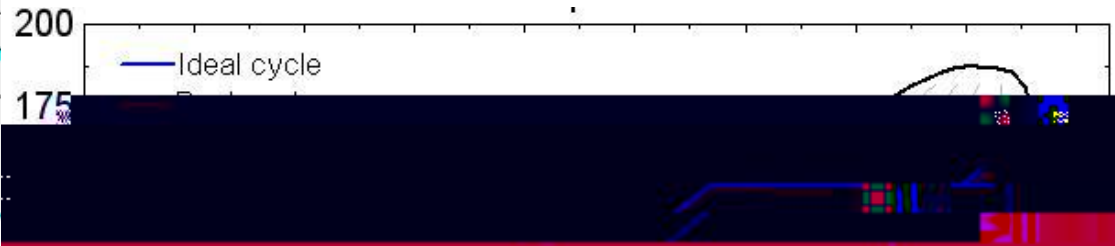
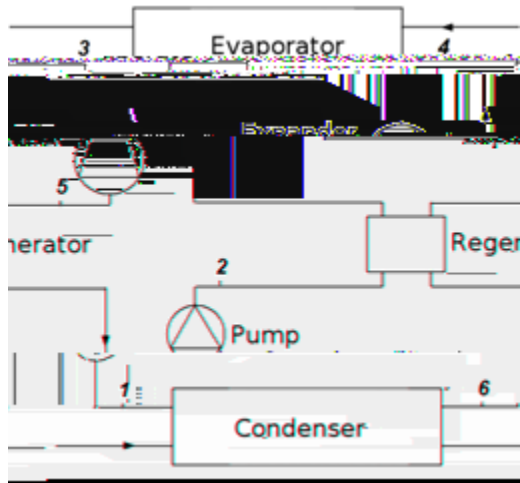
PACKAGED ENERGY PLANT SOLUTIONS

Developing Real Financeable Projects

from

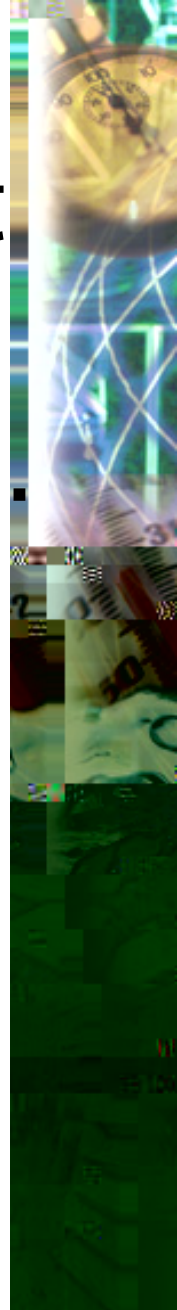


Organic Rankine Cycle Basics

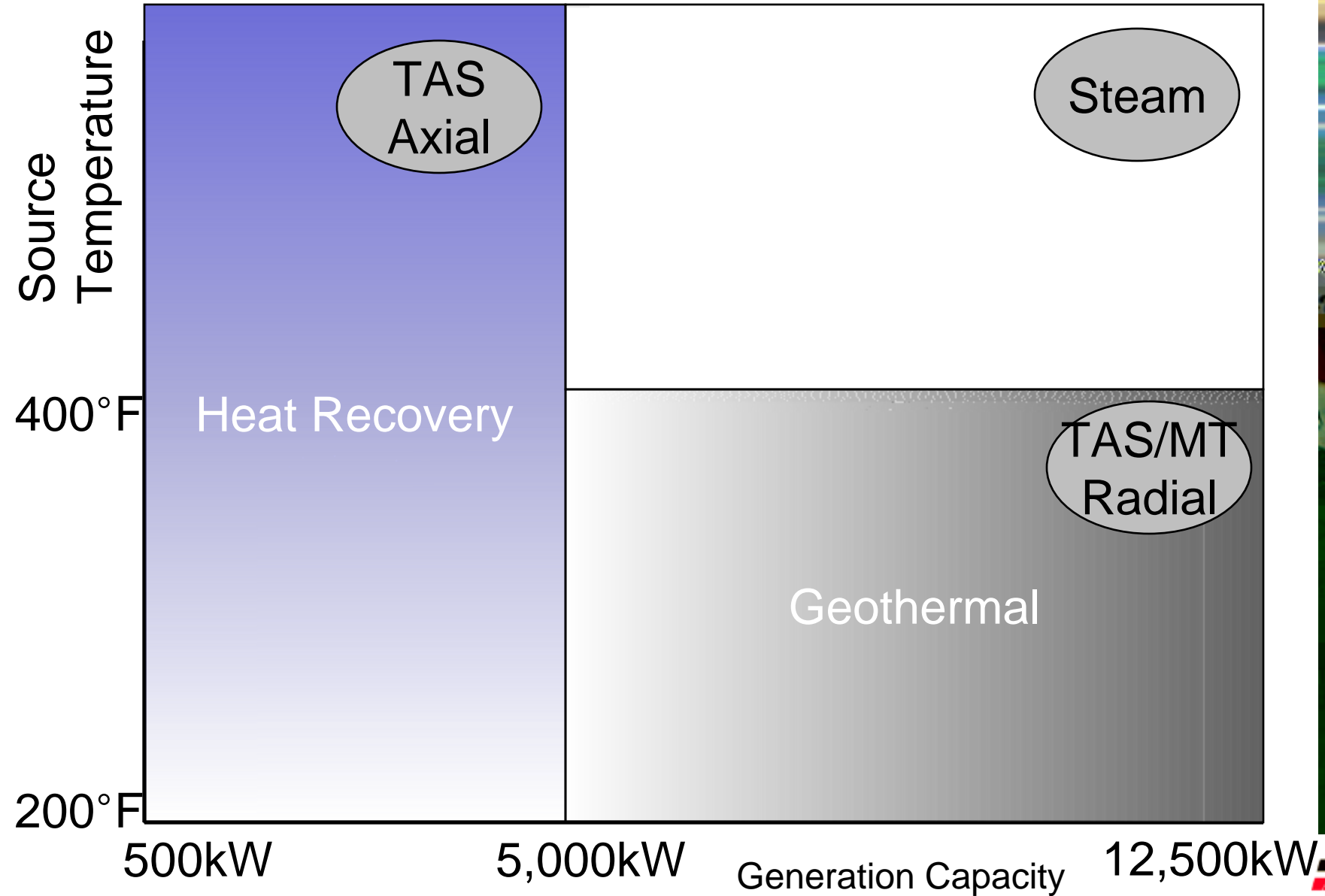


Key Drivers for Any Development

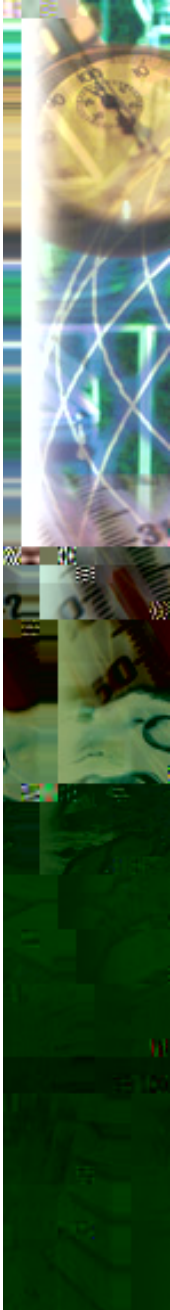
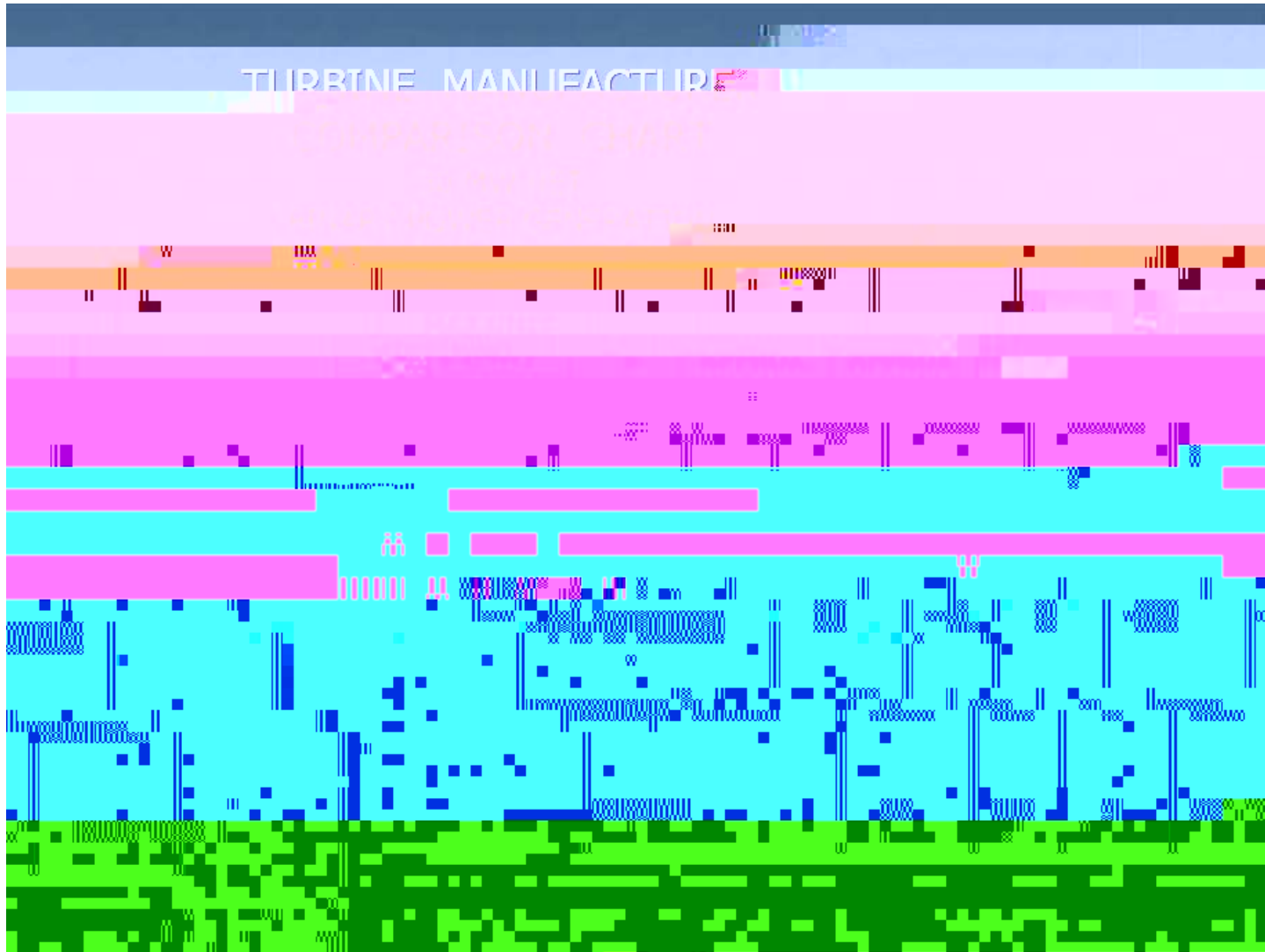
- **Normally quantified in NPV, IRR, ROI...**
- **Does the application make sense...**
 - 1.Resource temp (flow, quality, validation)...
 - 2.Ambient temperatures...
 - 3.Water... make-up water?... or Air Cooled...
 - 4.PPA – or offset tariff rate...
 - 5.Costs and financial feasibility??????????
 - 6.Where does the \$\$ come from??????????



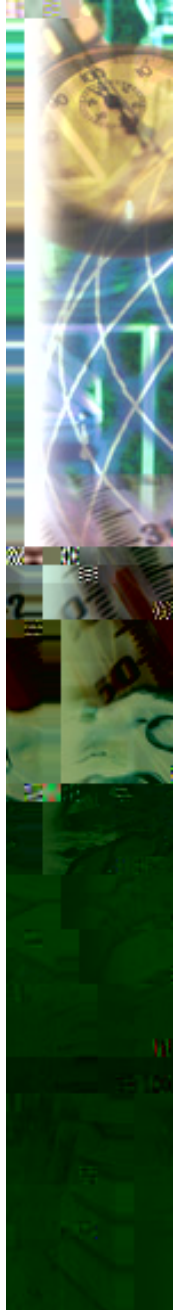
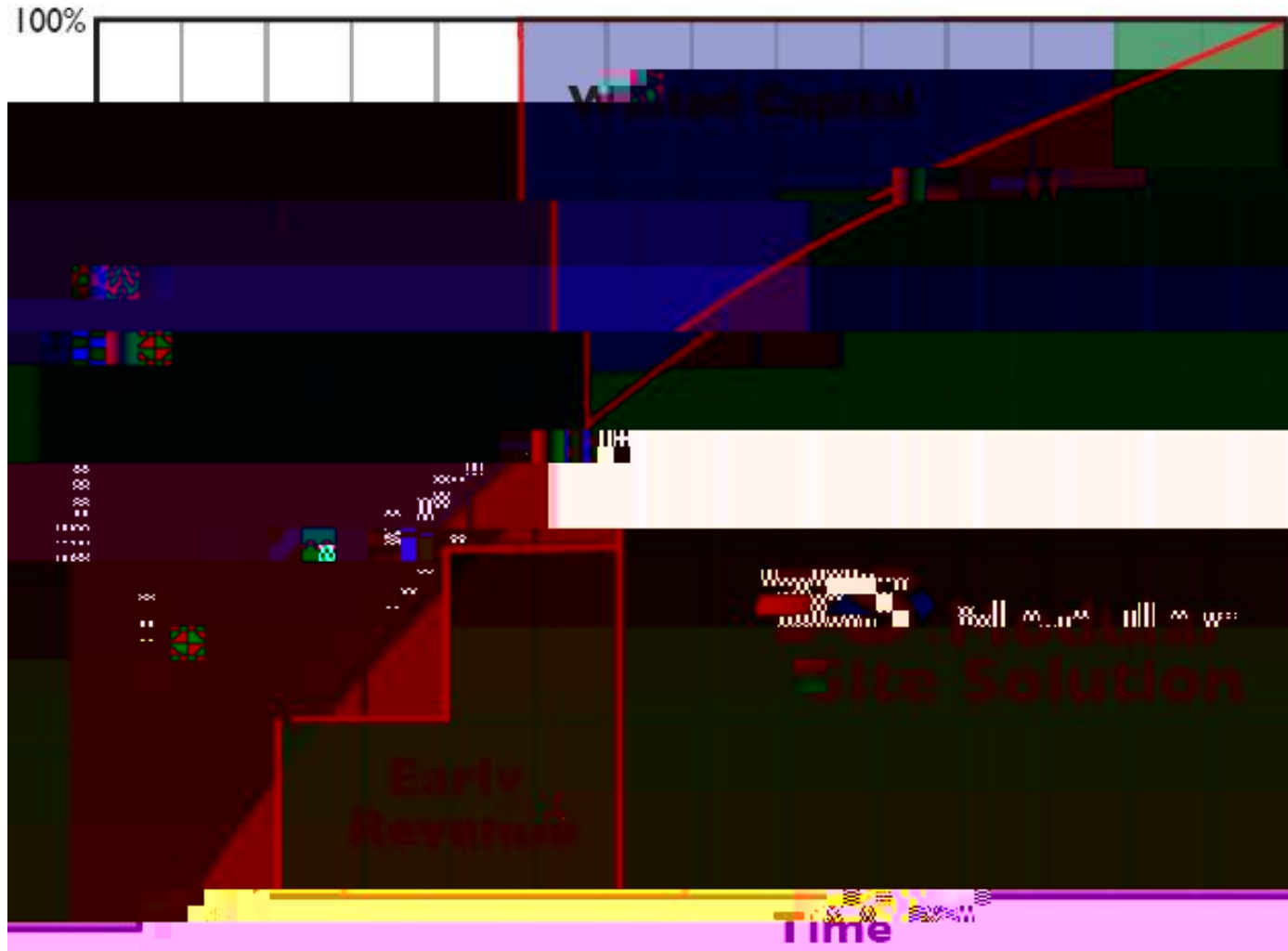
Capacity Flexibility



Binary Comparison

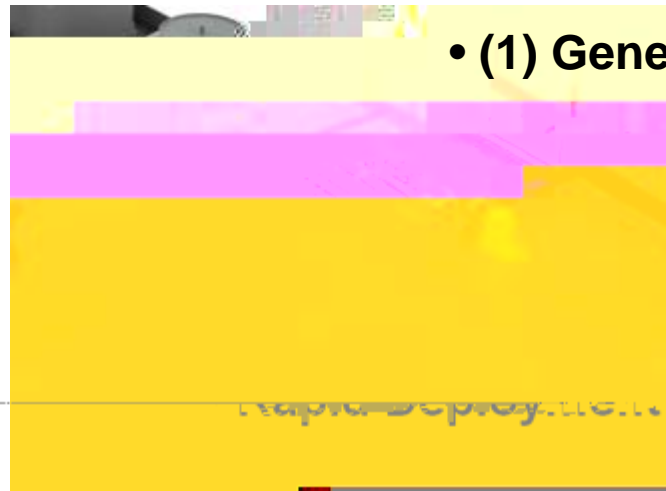


Staged Deployment



~ 0.5 – 15.0 MW Modular Enhanced Geothermal System

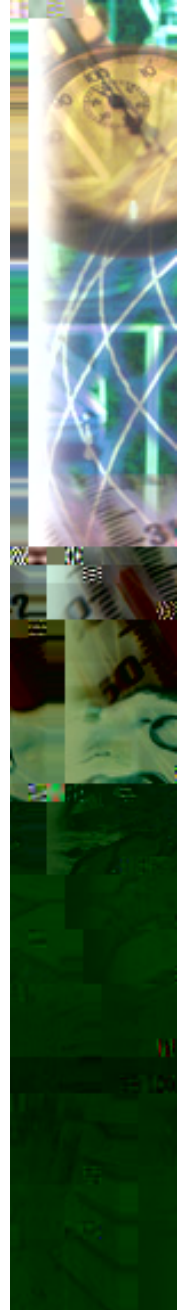
- (2) Piping connections w/ valves



- (1) Generator connections

- Simple controls

- Rapid Deployment



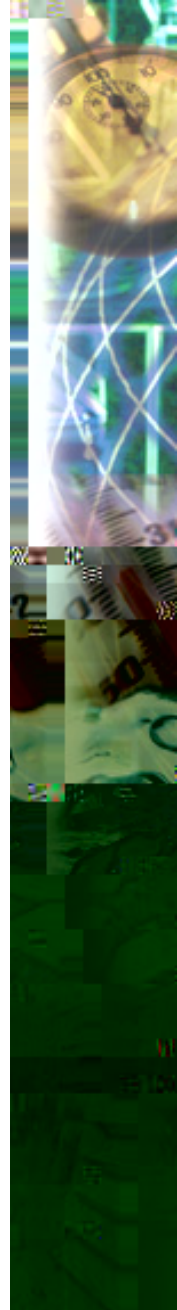
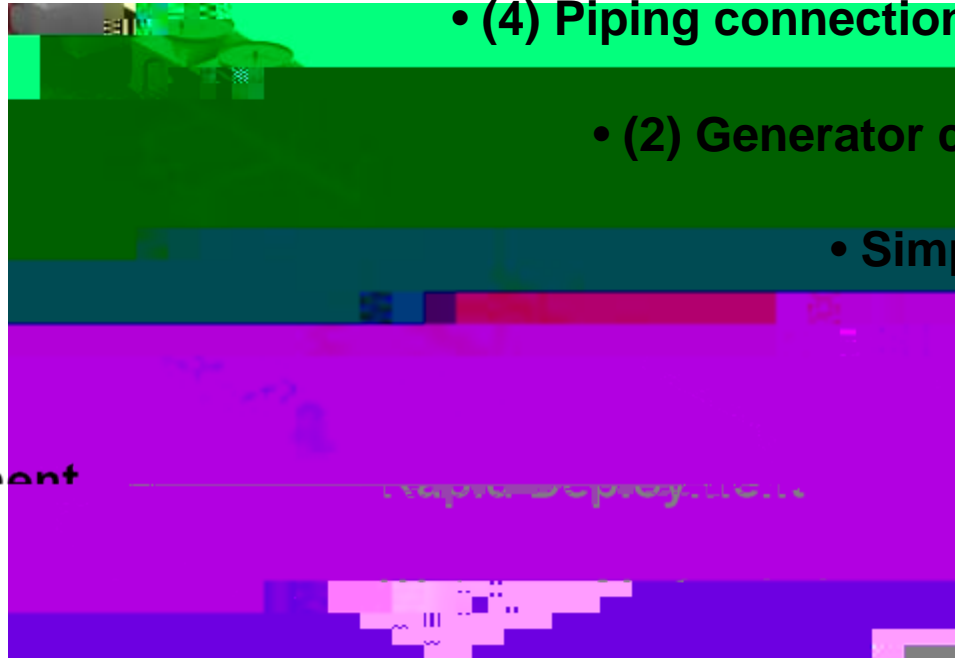
~ 1.0 – 30.0 MW Modular Enhanced Geothermal System

- (4) Piping connections w/ valves

- (2) Generator connections

- Simple controls

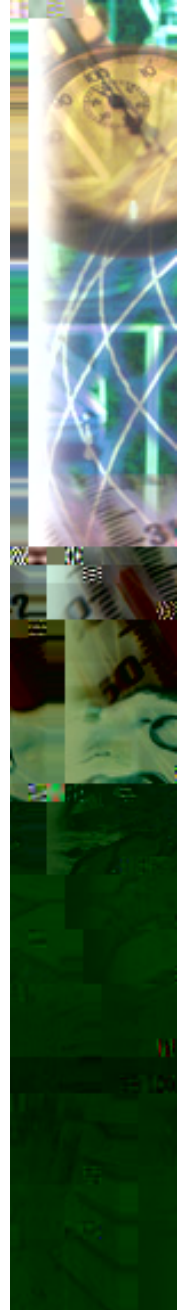
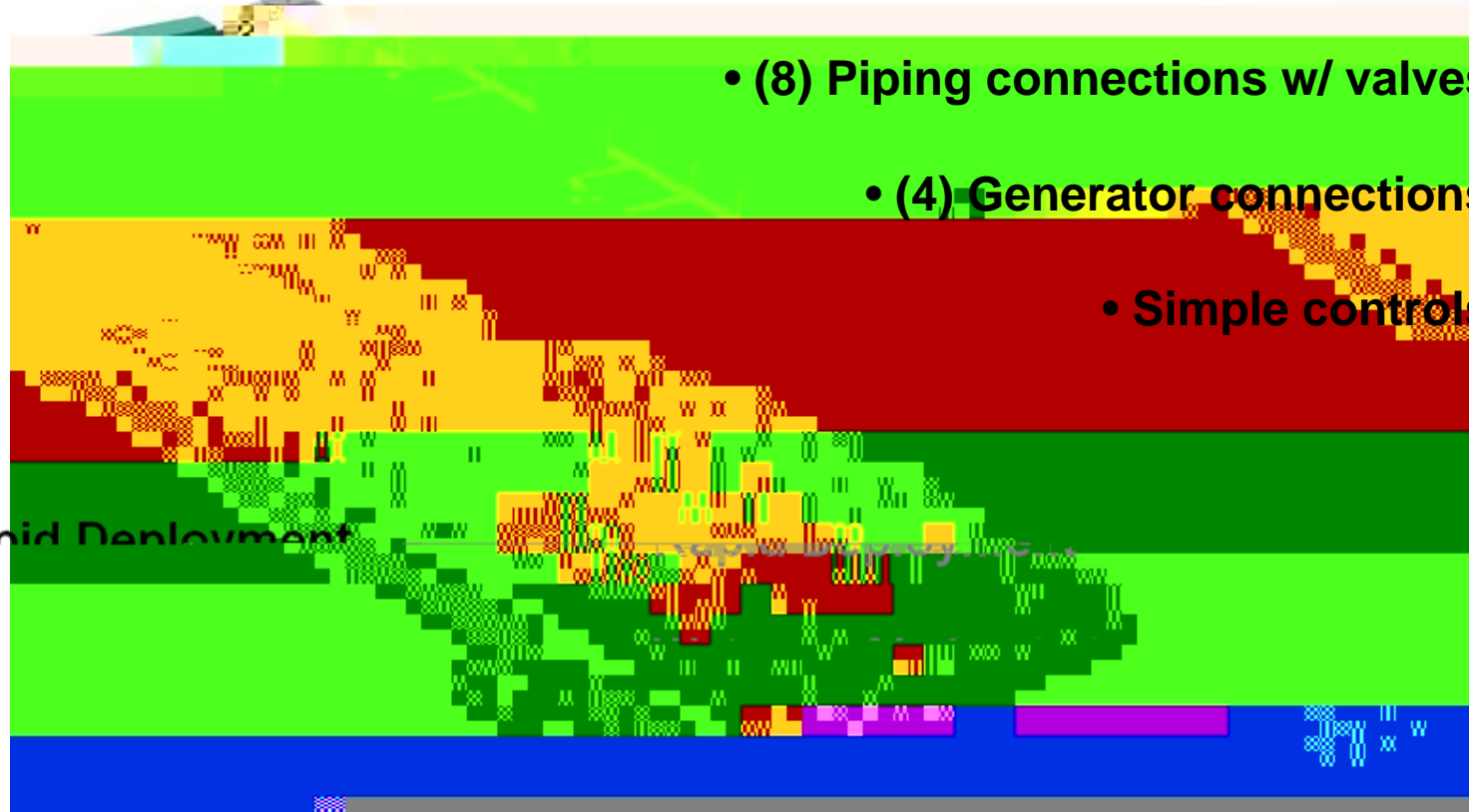
- Rapid Deployment



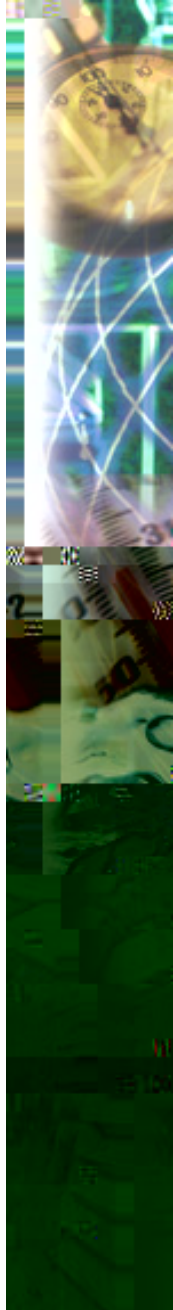
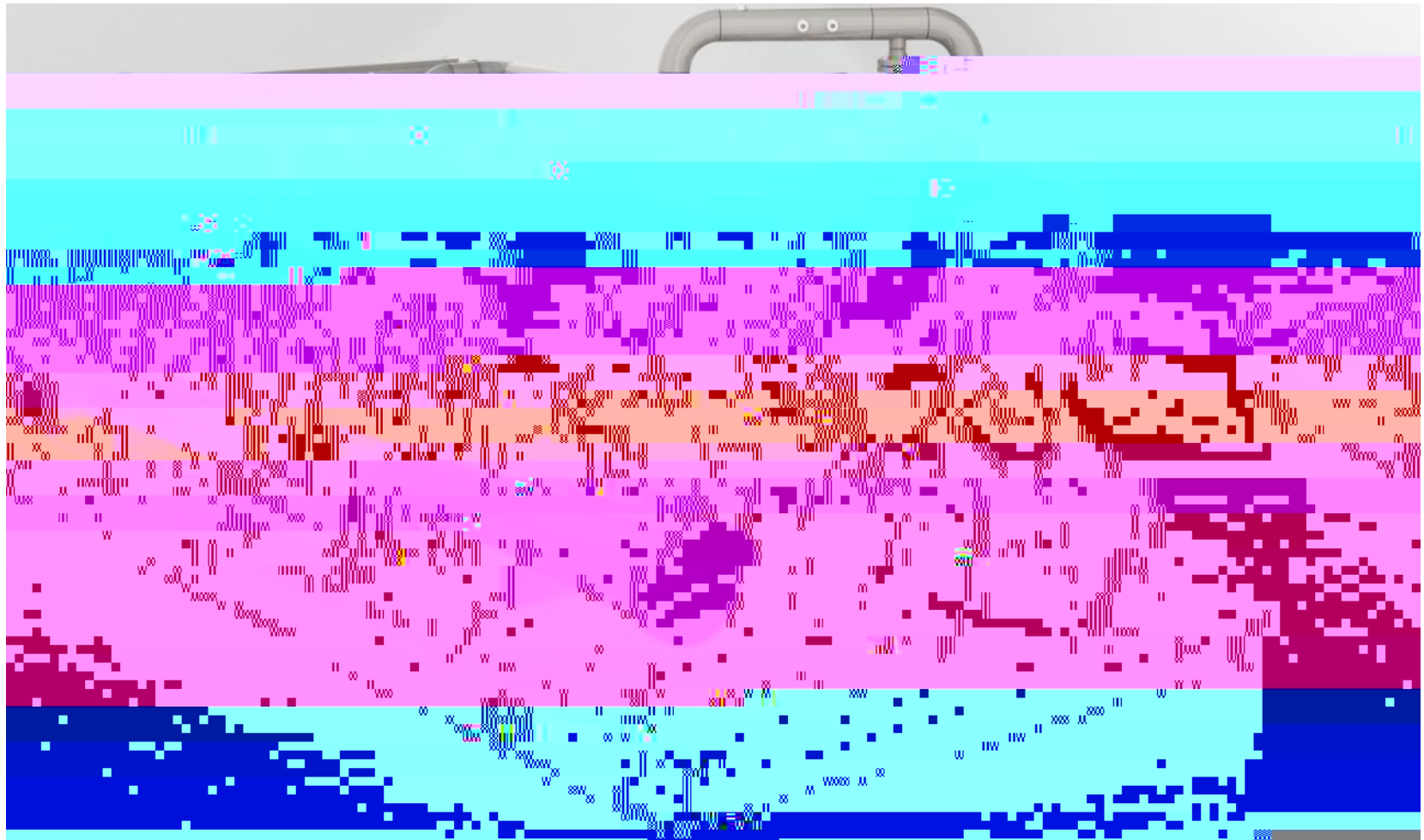
~ 2.0 – 60.0 MW Modular Enhanced Geothermal System

- (8) Piping connections w/ valves
- (4) Generator connections
- Simple controls

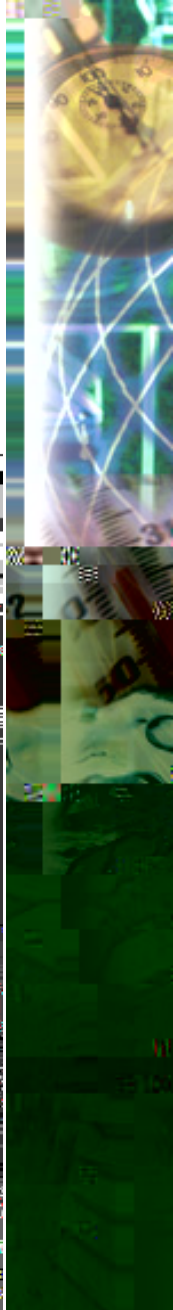
• Rapid Deployment



0.5 – 5.0 MW Geothermal EGS



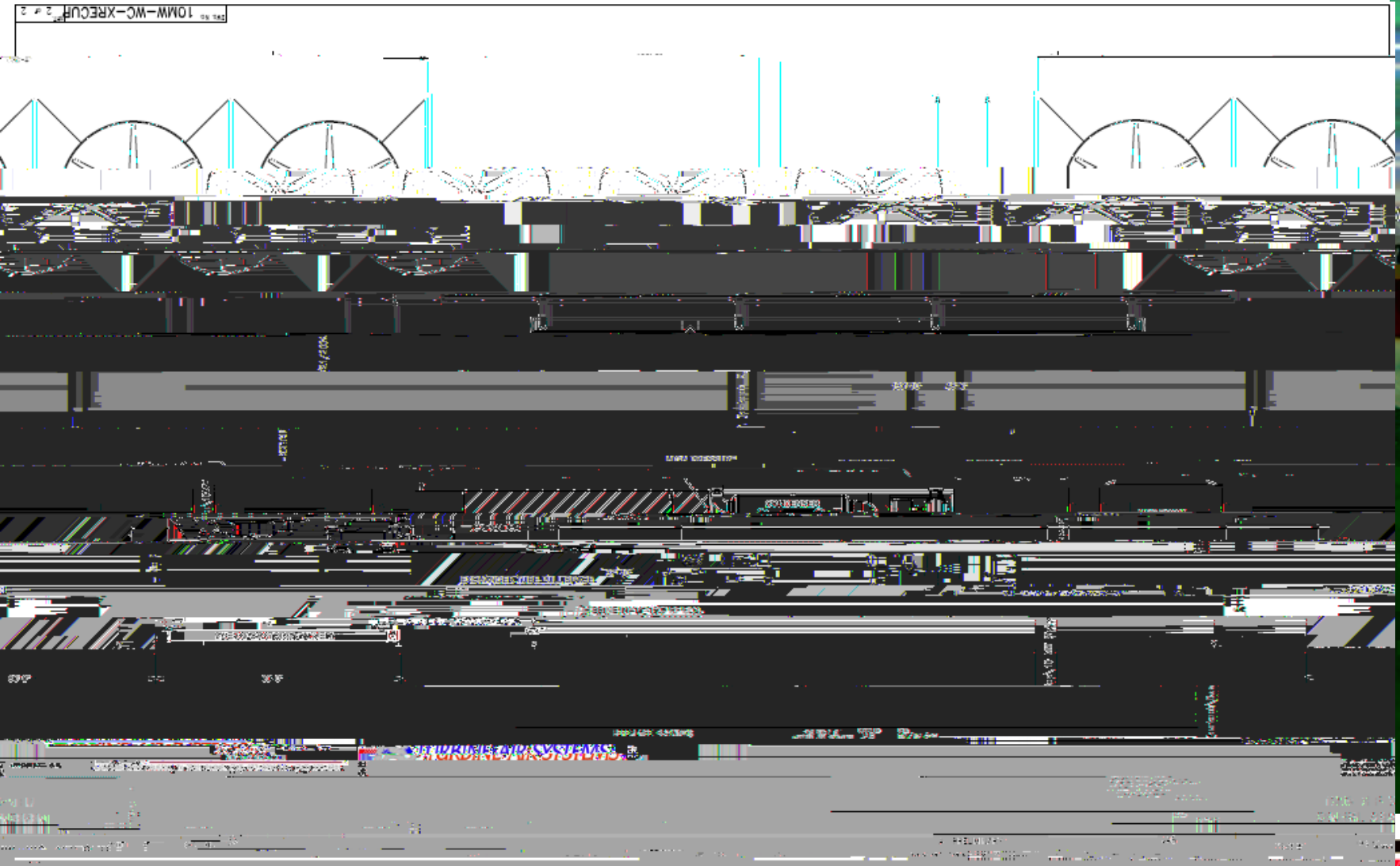
0.5 – 5.0 MW Geothermal EGS



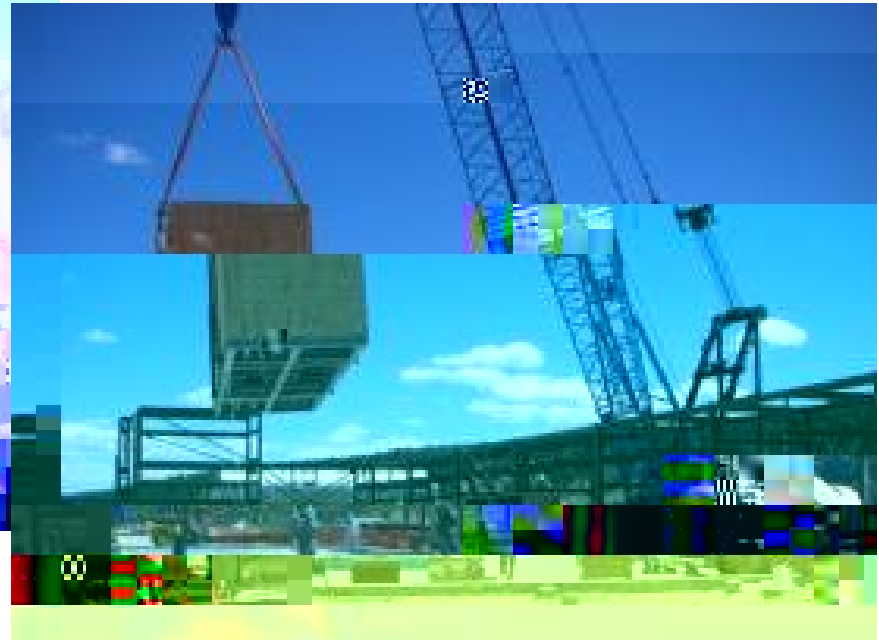
5.0 – 15.0 MW Modular EGS



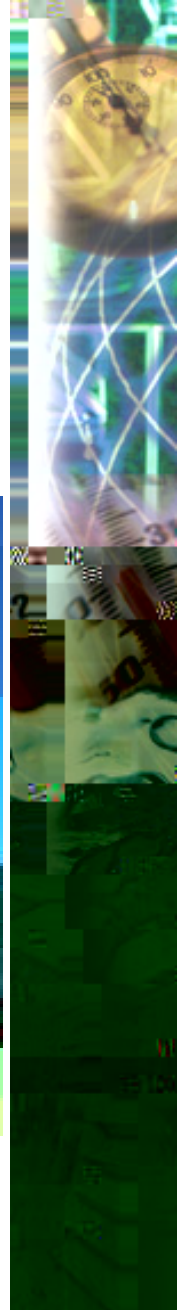
5.0 – 15.0 MW Modular EGS



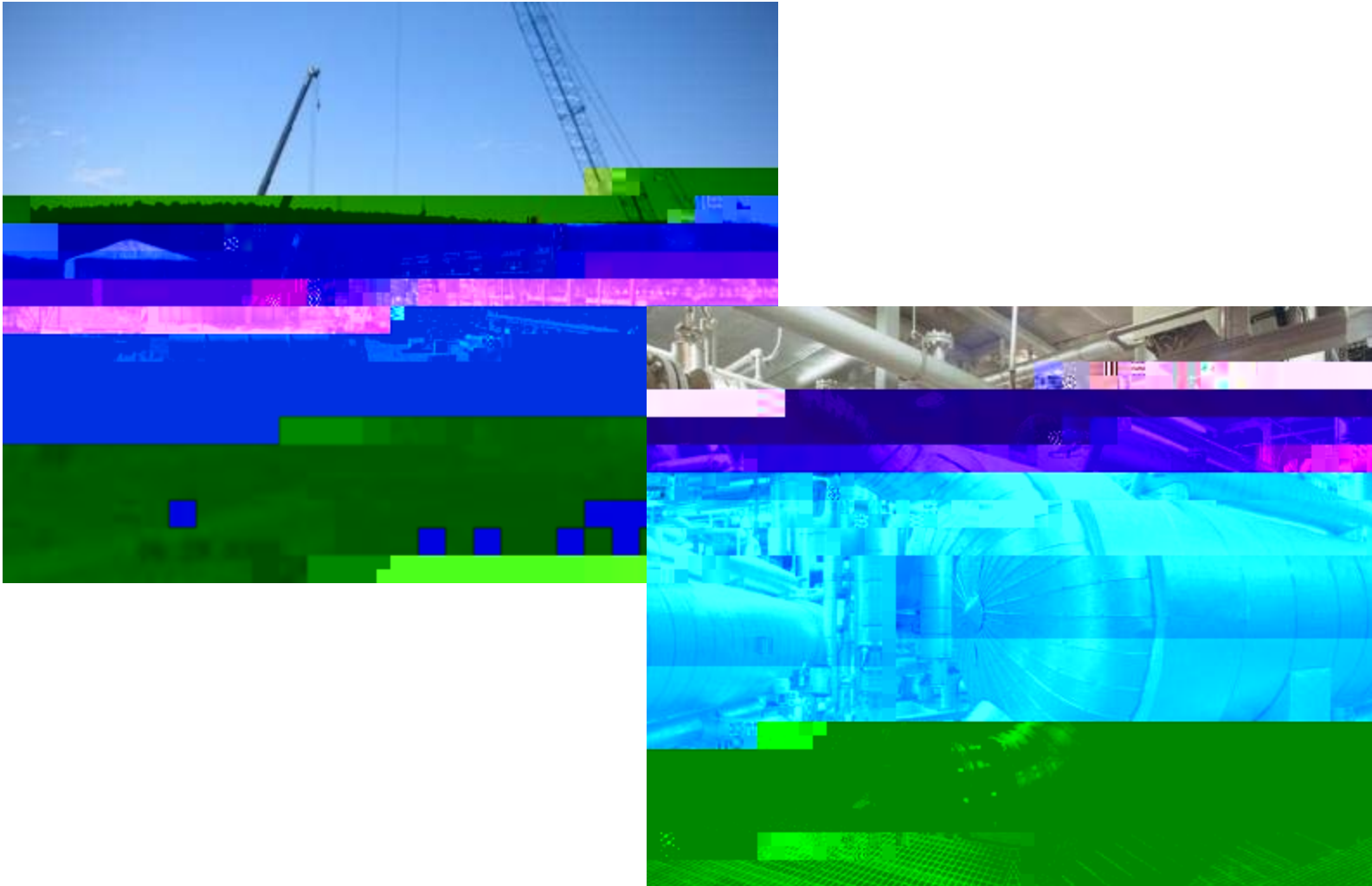
WHY Modular EGS...



Easy Transport – Quick Land



WHY Modular EGS...



Advanced Cycle Design – Efficiency - Temps

This is WHY TAS

Modular

Hydro-thermal

**Enhanced
Geothermal
Systems**

Solar Thermal

**Geo-Pressured
Fluids**



This is WHY TAS

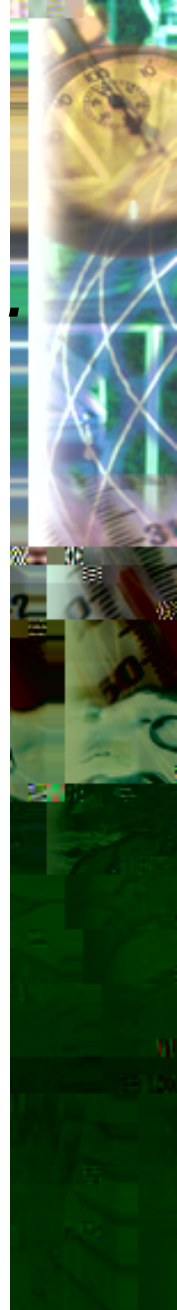
*Modular **Enhanced Geothermal Systems**...*

**Incremental
Financial
Efficiency**

**1/2 Development
Time – Early
Revenue**

**Ultimate
Financial Efficiency**

**Guaranteed
Performance**



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Thank you.

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